

Claims

1. Ceramic nanofiltration membrane for use in organic solvents, characterized by the fact that a mesoporous ceramic membrane ordinarily used for ultrafiltration is modified by treatment with a hydrophobing agent.
2. Ceramic membrane according to Claim 1, characterized by the fact that the pore size of the mesoporous membrane is between 2 nm and 10 nm, preferably between 2 nm and 5 nm.
3. Ceramic membrane according to one of the preceding claims, characterized by the fact that the mesoporous ceramic membrane consists of a metal oxide, preferably TiO_2 , ZrO_2 , Al_2O_3 or SiO_2 or mixtures of two or more of these oxides.
4. Ceramic membrane according to one of the preceding claims, characterized by the fact that the hydrophobing agent used for modification is a silane of the general formula $\text{R}_1\text{R}_2\text{R}_3\text{R}_4\text{Si}$.
5. Ceramic membrane according to Claim 4, characterized by the fact that between one and three, but preferably one of the groups $\text{R}_1\text{-R}_4$ are hydrolyzable groups, like $-\text{Cl}$, $-\text{OCH}_3$ or $-\text{O}-\text{CH}_2-\text{CH}_3$.
6. Ceramic membrane according to Claim 4, characterized by the fact that between one and three but preferably three of the groups $\text{R}_1\text{-R}_4$ are nonhydrolyzable groups, like alkyl groups, phenyl groups.
7. Ceramic membrane according to Claim 6, characterized by the fact that, to increase the hydrophobic effect, at least one of the nonhydrolyzable substituents is at last partially fluorinated.
8. Method for production of a ceramic membrane according to one of the preceding claims, characterized by the fact that modification of the mesoporous membrane occurs by impregnation with the hydrophobing agent in the liquid phase.
9. Method according to Claim 8, characterized by the fact that penetration of a hydrophobing agent is supported by a pressure difference between the front and back side of the membrane.
10. Method for production of a ceramic membrane according to one of the Claims 1 to 7, characterized by the fact that modification of the mesoporous membrane occurs with the hydrophobing agent from the gas phase.

11. Method according to one of the Claims 1 to 9, characterized by the fact that, after treatment with the hydrophobing agent, heat treatment between 100 and 400°C, preferably between 150 and 300°C is applied.